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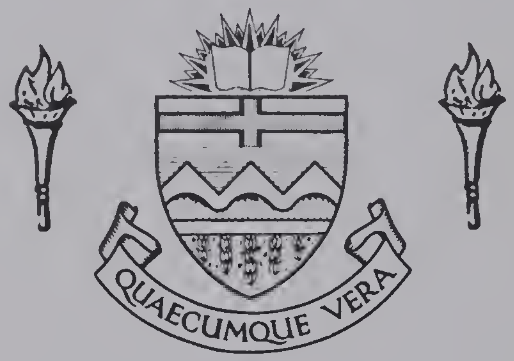

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PSYCHOLOGICAL AND SOCIOLOGICAL CORRELATES OF USE AND NON-USE OF MARIJUANA

by

© John Randal Wozny

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION.

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Psychological and Sociological Correlates of Use and Non-Use of Marijuana", submitted by John Randal Wozny in partial fulfilment of the requirements for the degree of Master of Education.

ABSTRACT

One thousand, two hundred and eleven students at the University of Alberta and the Northern Alberta Institute of Technology participated in a questionnaire study requesting information pertaining to use and non-use of marijuana products and a number of sociometric and descriptive variables.

Secondary sub-groups were obtained from this population. These groups were defined as users, potential users and non-users of marijuana. The N for respective groups were: 89 users, 32 potential users, and 39 other. Analysis of a number of psychological, sociometric and descriptive variables was performed.

In general summary, users and non-users of marijuana within this particular population differed significantly in two out of eleven psychological variables. Marijuana users trended toward "necrophilus" tendencies, as measured by the Life Orientation Test, as opposed to "biophilus" tendencies. Marijuana users also demonstrated a trend toward diminished "social acquiescence" concerns, as measured by the Social Acquiescence Test.

No significant differences were obtained in measured intelligence, anxiety, agreement response, perceptual complexity or authoritarianism.

Analysis of forty sociometric and descriptive variables indicated several trends within the sub groups. Marijuana users were generally more prevalent in first and second year student

categories. Marijuana use was significantly correlated with other drug use, including alcohol and tobacco. The typical style of use trended toward the gregarious. Marijuana users tended to come from upper-income bracket homes. Broken home background data obtained from this group suggests a negative correlation with marijuana usage at the post-secondary school level. Statistical significance was demonstrated in analysis of male hair length and style of dress data. The indicated trend was for marijuana users to be of "average" appearance, with no preponderance of "hippy" hair and dress styles.

No significant differences between users and non-users of marijuana were obtained in terms of the following variables: age, sex, height and weight, faculty, birth order, marital status, number of dependants, country of birth, citizenship, province or state birth, residence, age of parents, educational level of parents, amount of pocket money available in high school and university, facial hair, male and female somatotypes, and female style of dress.

DEDICATION

In loving memory of Michael and Mary Wozny

ERUCTAVITE COR MEUM

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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

Introduction

It is estimated that over twenty million "under-thirty" individuals have or are now using marijuana in that area of North America bordered by Mexico and Canada (Nat'l. Assn. of Blue Shield Plans, 1969). It is further estimated that over three hundred million human beings in this world find it within their means and desire to ingest, in various forms, the pharmacologically active components of *Cannabis sativa*, the ubiquitous hemp plant (Bull. United Nations International Control of Narcotic Drugs, 1965; Mechoulam, 1970).

Currently, little is known about the botanic, genetic and biochemical aspects of hemp and its products (Chemical Engineering News, July 6, 1970, p. 30; Mechoulam, 1970; Nilsson, Agurell, Nilsson & Ohlsson, 1970). Certain limited amounts of information relating to infra-human (Lewin, 1931) and human (Campbell, 1968, p. 8) physiological reactivity are available. However, in the scientific sense, we are as yet collectively and fundamentally ignorant of the psychological relationships between man and his use of Cannabinol compounds.

The current lack of experimentally derived psychological data is well recognized (Osmond & Hoffer, 1967; Weil, Zinberg & Nelson, 1968; Grinspoon, 1969).

Mechoulam (1970) states the following:

> It is a sad truth, however, that, in spite of the voluminous literature on the subject, critical scientific evaluations of the different aspects of the (marijuana) problem are few. (p.1159)

It is imperative that behavioral scientists come to clarify and understand the relationship between man and marijuana, for Cannabis products are "finding their way into every nation, into virtually every strata of society, every school and university, every age group" (Wall Street Journal, March, 1968).

World literature on marijuana or Cannabis products is both voluminous and contradictory. Approximately 2,400 publications dealing with the subject are currently extant, and vary in their message to a great degree (Mechoulam, 1970). One extreme general view is that Cannabis is very harmful, leads to criminal activity, is a "stepping-stone" to such "hard" drugs as heroin, and results in a general mental, moral and physical debilitation in chronic users (Munch, 1965).

Certain other writers have become vociferous advocates for the legalization of the drug. Their opposing view is generally something to the effect that marijuana has been around for a long time, is less dangerous than ethanol and tobacco, and has both emotionally panacaeic and potentially beneficial mind-expanding functions.

Dire prognostications of the inherent evils of the drug have become less acceptable to many as more and yet more

young people have experimented with marijuana. Extreme expectancies have simply not emerged as being valid.

We have reached a point in our current state of knowledge where a seeming standoff in biased ignorance is maintained between the North American and Western European "pro-pot expatriates" and traditionally oriented "anti's".

It may be as Leary (1969) has suggested,that these attitudes are contributing significantly to, among other things, an ongoing collapse of communication and understanding between youth and their preceding generation.

The problem of clarification of short and long-term behavioral effects of marijuana exposure and usage is as great an imperative for serious investigation as one could find in our time. The present study represents the investigator's efforts to contribute to the empirical literature on the effects of marijuana exposure.

CHAPTER II

REVIEW OF THE LITERATURE

Cannabis sativa enjoys a long and varied presence in the world literature. Kalant (1968) published the following table showing the language distribution of the publications dealing with Cannabis in the United Nations bibliography of 1968.

English	1073
French	309
German	232
Spanish	85
Portuguese	116
Italian	38
Others	111
Total	1965

Since then, this number has expanded, so that approximately 2,400 publications are now available (Mechoulam, 1970).

Botanically, a number of species of the genus Cannabis were recognized in the past: sativa, indica, and americana. Older references (U.S. Pharmacopaeia, 1870) made these distinctions. Currently, these "species" are regarded as varieties of a single species. The plant is a pisillated dioecious annual, and has world-wide distribution. The female plant produces the pharmacologically active compounds, which are contained in a sticky yellow resin that covers the top leaves and flower cluster.

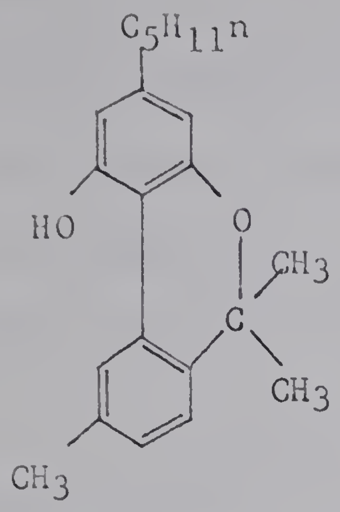
The chemistry of marijuana is quite complex. The family of Cannabis-derived molecules are characterized by a

structural component shared by many antiseptics, poison ivy, fungicides, antihelminthic compounds and synthetic estrogens: the phenol group (Jenkins, Hartung, Hamlin & Data, 1957, p. 57).

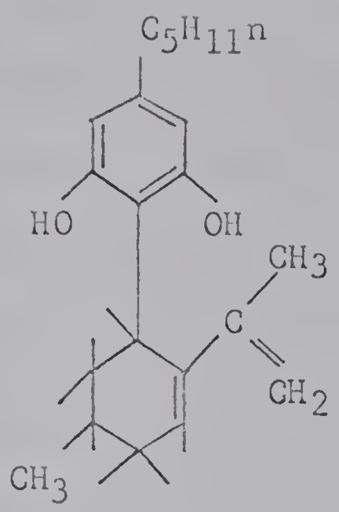
Phenols are compounds in which the hydroxyl group is substituted directly into the aromatic nucleus. Some of the more common members of this family of compounds are Phenol, the creosols, catechol, quinol, guiacol, alpha-napthol, beta-napthol, thymol and carvacrol. Thymol and carvacrol occur naturally. Thymol is found in oil of thyme and carvacrol is the chief constituent of oil of organum. Chavicol is present in bay leaf oil and in the oil of the narcotic betel leaves.

The structural chemistry of the cannabis drugs is extremely complex and is still not completely understood (Grinspoon, 1969). In the 1940's tetrahydrocannabinol was identified as a basic active ingredient, along with a number of its isomers (Adams, 1949).

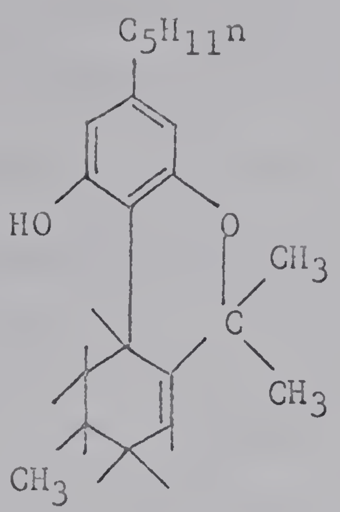
Currently, two tetrahydrocannabinols are thought to be responsible for producing the "euphoric state sought after by Cannabis connoisseurs" (U.S. Govt. Report on Marijuana Program Advances at NIMH, Chem. & Engineering News, July, 1970, p. 30). The molecules are water insoluble, and studies aimed at clarification of metabolic pathways and molecular degradation are currently in progress (Mechoulam, 1970).



Cannabinol



Cannabidiol



Tetrahydrocannabinol

The first Cannabinoid was synthesized in 1941 (Mechoulam, 1970). This was the inactive cannabinol. An adjunct to this procedure was the discovery of an intermediate $\triangle^3$THC which proved to have "hashish-like" activity. Laboratory synthesis of THC, or tetrahydrocannabinol was accomplished in 1965 (Mechoulam & Gaoni, 1965). The synthesis "was of little practical value, nevertheless, it has since been improved" (Fahrenholtz & Kierstead, 1967; Nilsson, Agurell, Nilsson & Ohlsson, 1969).

The elucidation of the fundamental chemistry, possible synergistic effects among various components of the crude drug, and other pharmacological matters of interest are currently being examined in a number of laboratories. With continued activity in these areas, more and more clarification as to specific biochemical properties of cannabis compounds will hopefully be soon forthcoming. The implications for psychological research are obvious. Until the chemistry problems are solved, it is as yet

difficult to evaluate dosage levels, and indeed to perform precise pharmacological-behavioral studies. Without this understanding, researchers are at best operating with the crude drug, and a number of analytical problems will continue until fundamental specifics are identified. (Mechoulam, 1970)

Marijuana ("pot", "grass", "weed", "tea", "Mary-jane") is one of several preparations of varying strength obtained from the female Indian hemp plant. "It is consumed in many ways and under many names in different parts of the world .. hashish, kif (N. Africa); ganja, charas, bhang (India); ma jen (China); dagga (S. Africa); marihuana or marijuana (N. America); and maconha (S. America)" (Murphy, 1963).

Marijuana is usually smoked in cigarette form, but it may also be ingested in cookies, candy or tea or smoked in a normal pipe or a narghile. Hashish, the concentrated resin of the hemp plant, is marketed as blocks of solid dark resin, small pieces of which are placed on the burning end of an ordinary cigarette; a funnel of paper, a drinking straw, or a ballpoint pen with the insides removed leads the vapor directly to the nose or mouth ("steamboating", "toquing"). These effects are more immediate and more intense than those of marijuana (Unwin, 1968).

The earliest known reference to marijuana is to be found within a compendium of medicines in the herbal of the

Chinese emporor Shen Nung, dated 2737 B.C. (Grinspoon, 1969).

The drug has apparently been long regarded in different lights, in that even in ancient times some writers envisioned hemp as the plant that lined the road to Hades, while others were much more inclined to place it along the road to Paradise. Hemp does not maintain a unique position in this respect, for the history of medicine and pharmacology provides numerous examples of similar attitudes directed towards other drugs; the opiates, for example. Many an advocate of the beneficial aspects of such drugs only belatedly discovered detrimental side effects. Freud himself, for example, at one time vociferously advocated the use of coca and cocaine in therapeutic practice (Ethnopharmacologic Search for Psychoactive Drugs, 1967, p. 17; Jones, 1956).

As an early example of an attempt to capitalize on presumed beneficial aspects of Cannabis, the following is offered. Robert Hooke, in "An account of the plant, call'd Bangue, before the Royal Society, Dec. 18, 1689", suggested hemp "seemeth to put a Man into a Dream", and suggested it might "be of considerable Use for Lunaticks". He wrote (p. 219):

> It doth quite take away the Memory and Understanding; so that the Patient understands not, nor remembereth any Thing that he seeth, heareth, or doth, in that Extasie, but becomes, as it were, a mere Natural, being unable to speak a Word of Sense; yet is he very merry, and laughs, and sings, and speaks Words without Coherence, not knowing what he saith or doth; yet is he not giddy, or drunk, but walks and dances, and sheweth many odd Tricks; after a little Time he

> falls asleep, and sleepeth very soundly and quietly; and when he wakes, he finds himself mightily refresh'd, and exceedingly hungry. And that which troubled his Stomach, or Head, before he took it, is perfectly carried off without leaving any ill Symptom, as Giddiness, Pain in the Head or Stomach, or Defect of Memory of any Thing during the Time of its Operation...

Jacques-Joseph Moreau (de Tours) published "Hashish and Mental Illness" in 1845. His 400-page description of the effects of hashish and its relationship, effect-wise, to insanity was a monumental, but largely forgotten work. He countered the French materialist, and philosophical descendant of Descartes, La Mettrie (1709 - 1751), who was of the opinion that "Man is what he eats". Moreau's hypothesis was something to the effect that "Insanity is the dream of the man who is awake" (Holmstedt, 1967). Hashish, for him, was a sort of royal road to the study of certain forms of insanity, as well as a substance that provided inherently pleasurable experiences. This was apparently the first suggestion for a drug induced model-psychosis theory. One literary idea that emerged from this type of thinking was, "To make a new brain in an idiot (with the aid of hashish) in order to see if the mind could be expanded by development of the rudiments". This idea has a very familiar and modern ring to it.

Louis Lewin (1850 - 1929) published "Phantastica" in 1924. He categorized Indian hemp as an hallucinating substance, as opposed to the Euphorica (mental sedatives such as opium, morphia), the Inebriata (alcohol, chloroform, ether, benzene,

and nitrous oxide), the Hypnotica, (soporifics such as chloral, paraldehyde, potassium bromide and Kava-Kava), and the Exitantia (camphor, betel, caffeine plants, coffee, tea, Kola nut, Maté, tobacco, arsenic and mercury).

His preface included the following: "The potent influence of these substances leads us on one hand into the darkest depths of human passion, ending in mental instability, physical misery, and degeneration, and on the other to hours of ecstasy and happiness or a tranquil and meditative state of mind". His view was,

> If human consciousness is the most wonderful thing on earth, the attempt to fathom the depths of the psycho-physiological action of drugs makes this wonder seem greater still, for with their help man is enabled to transfer the emotions of everyday life, as well as his will and intellect, to unknown regions; he is enabled to attain degrees of emotional intensity and duration which are otherwise unknown to the brain. Such effects are brought about by chemical substances. The most powerful are these of the vegetable kingdom, into whose silent growth and creative abundance man has not yet fully penetrated. By the exercise of their powers on the brain, they release marvelous stores of latent energy. They relieve the mentally tortured, assuage the racking pains of the sick, inspire with hope those doomed to death, endow the overworked with new vitality and vigour such as no strength of will could attain; and replace for an hour the exhaustion and languor of the overworked by mental comfort and content.
>
> (Lewin, 1931, p. 10)

In many ways Moreau de Tours and Lewin publicised some of the more exciting aspects of Cannabis intoxication, and in the words of Lewin, paved the way for increasing narcomania and the non-medical use of hemp products (especially in

literary circles) in France and Germany.

Cannabis was first mentioned in the U.S. Pharmacopaeia in 1870 (Lloyd, 1921). It remained listed as a medicament until 1937, at which time it was de-listed (Grinspoon, 1969).

The British Pharmacopaeia of 1914 suggests the following extraction procedure and dosage level:

> Exhaust Indian Hemp, in coarse powder, with Alcohol (90 per cent) by the percolation process; recover the alcohol by distillation, and evaporate the residue to a soft extract.
>
> | Dose: | Metric | Imperial |
> |---|---|---|
> | | 16 to 60 milligrams | ¼ to 1 grain |

Apparently hemp extracts were used for a number of medical purposes, including mixture with opium, and inclusion into plaster casts. (p. 127)

Haggard (1929), in "Devils, Drugs and Doctors", described the use of "opium, hemp (hashish) and mandrake" as anaesthetics prior to the discovery of ether in 1846. However, these were unsatisfactory substances, due to their "depressing influence upon the action of the heart and respiration".

In more modern times, psychologically relevant literature of a more empirical and experimental nature appeared. Exemplary and pioneering works were the Canal Zone Study (1933) and the La Guardia Report (1944).

In the Canal Zone study, thirty-four military subjects were exposed to marijuana. The results reported included "increased pulse rate, tendency to sleep, hunger, hyperphagia,

loss of inhibitions and a lack of change in tests of psychological and neurological functions".

The dose and form of Cannabis was not specified.

The La Guardia Report was a study by the New York Mayor's Committee which employed ten psychometric measures, four of which were objectively concerned indirectly with the personality of the subjects involved. These measures were:

1. A Frustration Test which utilized Wechsler Self-Administering Mazes, the third or fourth one being so designed that no exit is possible;
2. The Loofbourrow Personal Index: Test I - a measure of self confidence consisting of one hundred words of which thirty are non-existent;
3. Pressey X-O Test, in which the individual is asked to cross out words which are unpleasant to him -- norms established on college students;
4. Downey Will-Temperament Test I: a series of paired personality traits such as sociable or unsociable, clumsy or graceful, in which the individual is asked to underline the trait which best describes himself.

The results of these tests were all negative in the sense that no differences among the control group and the users were demonstrated at a level of statistical significance. It should be noted that the tests used in the above study may be regarded as of questionable validity in regard to personality assessment.

The 1946 Study (Campbell, 1969) was done on a group of imprisoned men. The study was an attempt to evaluate long-term marijuana smoking and physiological functioning. The

results consisted of observed initial euphoria, which after a "few days"of smoking" gave way to an "indifference and lassitude and impaired performance". Unfortunately, no control group was utilized in this research.

Whitehead (1968) reported that use of marijuana in high school situations was highly correlated to the amount of pocket money available to the students. This was a questionnaire-type study, done in Eastern Canada. Students with more available pocket money demonstrated a significantly higher incidence of marijuana use than students who reported a lack or lower amount of allowance funds.

The degree of marijuana usage in North America is increasing in alarming proportions (Life, Oct. 31, 1969; Weil et al, 1968). To give some idea of the prevalence of Cannabis use in Boston, Weil reported that "It proved extremely difficult to find 'marijuana naive' persons in the student population of Boston and nearly two months of interviewing were required to obtain nine men. Nearly all persons encountered who had not tried marijuana admitted this 'somewhat apologetically'".

Bloomquist (1968) classified three types of marijuana users:

1. The uneducated, unemployed and poorly motivated person who eventually drifts into "hard drugs" such as heroin and other opium derivatives;
2. The person interested in self-exploration and "mind expansion" who is bored, curious and needs to find something different to experience;

3. The average person who is curious and uninhibited and who used marijuana as a means of gaining status and attention from his peers.

He estimated that it was the latter group which represented the largest number of users.

The above depiction of the drug-using "average" individual is a most distant relative of the type of person pharmacologists Goodman & Gilman (1955) describe as marijuana users:

> ..., usually 20 - 30 years of age, idle and lacking in initiative, history of repeated frustrations and deprivations, sexually maladjusted (often homosexual), who seeks distraction, escape, and sometimes conviviality in smoking the drug. He almost uniformly has personality defects and is often psychopathic..

Straus and Bacon (1953) have stated that marijuana has taken the place of alcohol as the "major vice" among college students. Obviously, a change of value is becoming apparent and Suchman (1968) refers to this new outlook on life as the "hang-loose" ethic. He sees the youth of today developing new behavior patterns and values are, for the most part, contrary to those of the established order... this being typified in the "hang-loose" ethic. "One of the fundamental characteristics of this ethic is that it is irreverent. It repudiates or at least questions seriously such cornerstones of conventional society as Christianity; my country right or wrong; sanctity of marriage; civil disobedience; the accumulation of wealth; right or even competence of parents, the schools, and the government to head and make decisions for everybody -- in sum, the establishment." (Suchman, 1968)

Suchman went on from his assumption that marijuana was limited in its use on campus as a recreational pastime and determined through a questionnaire approach that the more a student's self-image tended to be rebellious, cynical, anti-establishment, "hippie" and apathetic, the more likely it was that the student would use marijuana.

A recent study by Weil et al (1968) was conducted in a controlled laboratory setting. This study provides one of the few scientific psychological measures of the effect of marijuana on man. It centered upon the effect of the drug on the subject's attentiveness and muscular coordination as measured by the (i) Continuous Performance Test (CPT) - 5 minutes; (ii) the Digit Symbol Substitution Test (DSST) - 90 seconds; (iii) CPT with strobe light distraction - 5 minutes; (iv) self rating bipolar mood scale - 3 minutes; and (v) pursuit rotor - 10 minutes.

Weil found impaired performance on simple intellectual and psychomotor tests in marijuana-naive subjects. Performance, however, in regular users of marijuana appeared to improve slightly.

Grinspoon (1969) in a review article, writes that there "is considerable evidence that the drug (marijuana) is a comparatively mild intoxicant", and in terms of numbers of errors made in simulated driving problems when compared with alcohol, is somewhat less dangerous (p. 17).

Melges, Tinklenberg, Hollister and Gillespie (1970) recently reported that high doses of tetrahydrocannabinol (THC)

contributed to "a disintegration of sequential thought".

The study reported impaired immediate memory and "disorganized speech and thinking".

Eight male graduate students participated in a double-blind study wherein three different oral doses of THC dissolved in alcohol and a placebo were given in randomized order over four days which were separated by "at least one week". Doses were ingested after an eight-hour fast. Subjects were tested before drug ingestion, and then one and one-half, three and one-half, and five and one-half hours later.

The interpretation of data resulted in the impression that sustained attention and long-term memory operations were not affected by THC, even with increasing dose levels.

However, short-term memory "was impaired by THC. Both forward and backward digit spans were significantly decreased by all doses of THC, although there were no significant differences between doses. Return to normal digit span performance occurred after three and one-half hours of exposure".

In summary, it is quite evident from the review of the literature that there is indeed currently very little emphatically known about the physiological and psychological effects of Cannabis sativa on man.

In regard to this current state of affairs, it is the author's intent to explore a number of research avenues in reference to behavior and Cannabis. The following study is an

expression of this desire, and hopefully will provide additional meaningful information on the topic of man and marijuana.

CHAPTER III

PSYCHOLOGICAL AND SOCIOLOGICAL MEASUREMENTS

The Psychological instruments employed in this study consist of the following:

L.O.T. - Life Orientation Test
P.C.T. - Paragraph Completion Test
IPAT Anxiety Scale
A.R.T. - Yeasayers and Naysayers Test
S.A.T. - Social Acquiescence Test
Henmon-Nelson Test of Mental Ability
California F Scale

The L.O.T. was developed at the University of Alberta (Fox, 1969). It is a forty-item inventory. The test is an instrument designed to identify anti-life (necrophilus) as opposed to pro-life (biophilus) tendencies*.

The test has a reported high reliability (.83).

L.O.T. scores are "relatively independent of sex, verbal and performance I.Q., and written language ability". Age however, has been reported as a significant factor, resulting in an "inverse relationship of the L.O.T. with age".

A high L.O.T. score is defined as being in the biophilus range, while an obtained low score on the instrument is regarded as an expression of necrophilus tendencies. High L.O.T. scorers (biophils) are reputed as being "more conceptually complex, more

---

*In the vernacular, Harvey Zingle (personal communication, 1969) defined the biophilus personality as being "nourishing", while the necrophilus individual is "poisonous". This seems to be an apt adjunct to the formal, empirical definition.

openminded, less authoritarian, less socially acquiescent, more rejecting of institutions and less likely to embrace illogical ideas. The reverse is reported for the Necrophil (Fox, 1969).

P.C.T. - Paragraph Completion Test

The PCT was devised to measure cognitive complexity. It consists of six sentence openings which are to be completed by the subject in two or three sentences (e.g. Parents...).

Schroder, Driver and Struefert (1967, p. 190) report typical inter-rater reliability correlations in the .80 to .95 range. Internal consistency over the six items is given as .57 to .75 (Schroder et al, 1967, p. 106). Schroder's thesis is that individuals may be differentially categorized along a continuum of "complexity" or "simplicity" in their conceptual structure. A person of low conceptual complexity is characterized as possessing:

1. few dimensions along which a stimulus situation can be located,
2. little discrimination within these dimensions, and
3. a few absolute rules to govern integration of impinging stimuli.

The individual of high conceptual complexity, in contrast, demonstrates:

1. a multi-dimensional system with which to order or combine incoming stimuli,
2. finer discrimination along these dimensions,
3. complex integration rules for impinging stimuli, and
4. the potential to generate alternate patterns of interaction.

> Thus, level of conceptual structure is a functional determinant of the individual's information-processing system. It follows, therefore, that the "way" or structure of thought is more significant than the "what" or content of thought. Static trait theory is rejected by Schroder et al and beliefs, needs, concepts, and attitudes are seen as emanating from the structure that is basic to information integration. Therefore, for any two persons a mutually held attitude may emerge from almost totally disparate structural variables and hence very different overt responses could result. The low-level person with a simple black-white dimension and few rules or one relatively fixed rule for information integration would perform differently than those with high-level conceptual structure, who possess abundant rules, associative linkages, and the power to generate novel relations.
> (Fox, 1969)

I.P.A.T. Anxiety Scale

The I.P.A.T. Anxiety Scale is a forty-item test derived from the Cattell 16 P.F. The instrument is well documented and is highly regarded as a sensitive instrument for identification of "anxious" subjects. Evidence for the test's validity is "varied and impressive" (Cohen , 1965). Construct validity coefficients are in the range from .85 to .90.

Reliability coefficients for the total anxiety scale range from .80 to .93 (Cohen , 1965, p. 121).

Cattell and Scheirer (1965) determined that alcoholics scored highly on the first order factor components identified as "anxiety". These components were defined as :

(a) High Ergic Tension, Q_4+: defined as stimulated but undischarged energy arising from any erg (drive).

(b) High Guilt Proneness, O^+: This is overtly reported as a form of anxiety with guilt and an unworthiness prominent, and it correlates with "approved" and considerate behavior as observed by colleagues.

(c) Lack of Will Control, or Low Self-Sentiment Strength, Q_3-: This factor is interpreted as control of impulse and excitability by the self-sentiment. This may involve:

(d) Lack of Ego Strength, C-: This appears often in clinical ratings as badly organized personality, abnormal emotionality, etc.

Low-anxious subjects conversely are identified as having:

(a) Low Ergic Tension

(b) Low Guilt Proneness

(c) Adequate control of will and high self-sentiment strength.

(d) Adequate Ego Strength.

It seems reasonable to expect personality patterns between alcoholics and marijuana users to be congruent, thereby "making the use of this instrument particularly interesting and appropriate" (Cattell, personal communication, 1970)*.

A.R.T. - Yeasayers and Naysayers Test

Couch and Keniston (1960), while working on the problem of response sets, devised a nineteen-item instrument known as the Agreement Response Test. Using this test, they identified two groups of individuals, "yeasayers" and "naysayers". "Yeasayers" are described as high-scoring individuals who tended to admit stimuli to consciousness without censorship, and by agreeing with, acting out and otherwise yielding to the pressures of input. "Naysayers" are characterized by low scores and opposite stratagems

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*Telephone conversation - R.B. Cattell, March 1970

in information processing and interpersonal behavior. They tended to be stable and reflective individuals somewhat akin to the reflective pole of Kagan's (1965) reflection-impulsivity dimension. According to the above description, "yeasayers" may be expected to resemble simple-concrete personality types, while "naysayers" are expected to be complex-abstract.

"Naysayers" are further regarded as being individuals characterized by having a high resistence to movement and change, ego domination, and a tendency to excessive control and inhibition, as opposed to opposite tendencies discernable in the "yeasayer".

An r. of .75 between this scale and the Anal Preoccupation scale is reported (Couch & Keniston, 1960).

S. A. T. - Social Acquiescence Test

The test consists of forty-one items. Each item of this instrument consists of a famous saying. The subject responds by signifying "yes" or "no" in a column opposite each saying. The S-A scale is scored by totalling the "X's" in the "yes" column (Bass, 1958).

The interpretation of the scale is founded on the notion that subjects high in social acquiescence are "insensitive, non-intellectual ... unquestioning conformists to social demands".

Such individuals are expected to say "yes" to items in the test. A high raw score is indicative of high social acquiescence.

Validity studies have been numerous and diversified (Bass 1957, 1956A, 1956B, 1961).

Split-half reliability has been reported as being .92 (Bass 1958, p. 488).

Henmon-Nelson Test of Mental Ability (T.M.A.)

The instrument consists of a one-hundred item test, providing scores on verbal, quantitative and total I.Q. scores. The Henmon-Nelson was derived from a normative background of 1,002 subjects. Self-scoring answer sheets were employed by the author.

Reliability (Wallen , 1965, p. 462) is given as .92 and .89 for Q., .93 for V., and .95 and .94 for total scores on form A.

Validity figures indicate a range from .46 to .54.

California F Scale

The well known F scale of Adorno Frenkel-Brunswik, Levinson and Sanford (1950) is a well-validated measure of authoritarianism. Deutsch and Krauss (1964) report the following:

> ...people who score high on authoritarianism are more likely to be low class, less educated, less intellectually sophisticated, less liberal, politically more prejudiced, less successful as patients in psychotherapy, more religious, and stricter in their child rearing practices than people who score low on authoritarianism. (p. 163)

The test originally contained 29 items, but is now generally administered with one item deleted.

High validity is reported.(

Reliability figures are extremely high, averaging .90, with a reported range from .81 to .97 (Adorno, 1950).

Sociological and Descriptive Measures

The questionnaire form contains 25 items of interest. These consist of the following:

1. Name and sex
2. age
3. height and weight
4. faculty
5. year of study
6. number of older brothers, sisters
7. number of younger brothers, sisters
8. use of drugs (yes - no)
9. types of drugs used
10. use of cannabis (yes, no, maybe)
11. last use of cannabis
12. style of use (alone or in company)
13. marital status
14. number of dependants
15. country of birth
16. citizenship
17. place of birth (province, state)
18. residence
19. age of parents
20. educational level of parents
21. income level of parents
22. marital status of parents
23. pocket money available in university and high school
24. male somatotype, hair length, facial hirsutism and style of dress
25. female somatotype and style of dress

(items 24 and 25 are completed by the examiner when the testee returns the questionnaire.)

Male and female somatotypologies are derived from observation, and the height and weight inclusions. The complete data sheet appears in the appendix.

Hypotheses - Introduction

In preface, it is obvious that the marijuana user has been regarded differentially by various writers. Munch (1965) for example, strongly suggests a criminality relationship, effecting specific races. For him, it seems that marijuana use and being Greek or Negro will mutually and definitely interact to produce potential murderers, vagrants and committers of violent crime.

Various degrees of more "middle ground" opinions are evident, such as the views of Bloomquist (1968), Goodman and Gilman (1955) and Suchman (1968), which have already been outlined.

Depending upon one's biases, the user of marijuana can be regarded as some sort of fiendish personification of sloth, psychopathy, or criminality. The opposite view might hold that the user is some sort of pilgrim seeking artificial actualization and the denial of traditional stupificants such as alcohol and "legal" tranquilizers.

Specific hypothesis formation could depend, to a great degree, upon extreme biases of the type illustrated above. However, since widespread use of marijuana at the university level has been demonstrated (Weil et al, 1968) and has not yet been identified as a major cause of drop-out and failure at this level, it would appear that its use might not produce extreme or immediate and long-lasting serious debilatory effects.

With this in mind, it is obvious that veridical hypothesis generation will not necessarily originate from some of the more extreme views evidenced in the literature. By the same token, it would be quite easy to dispel certain extreme notions if they were to be included in null hypothesis formations and resultant analysis.

Since there is very little scientific evidence as to the effect of marijuana, it is the writer's opinion that one of the more reasonable approaches to the problem might well be that of "wait and see".

However, it is the nature of this type of proposal to advance hypotheses as to the expected outcome of the research. It would be possible to hedge and qualify opinions generated from researches in other problem areas, such as alcoholism. It is not the writer's intent to attempt such assumptions in toto, but will do so if a degree of reasonable generalization is warranted and acceptable.

Where no relevant studies on specific instruments are reported, attempts will be made to enunciate logical expectancies relative to a conservative viewpoint. With this in mind, a plea is entered for intuitive and tentative foundations for certain hypotheses to follow.

Psychological Hypotheses

1. It is advanced that differences will exist between groups of users and non-users of marijuana in terms of cognitive

complexity as measured by the Paragraph Completion Test. The expected direction will be that of greater incidence of usage in the "open" individual.

Harvey, Hunt and Schroder (1961) define openness as the "relative ease with which the organism is able to assimilate new information". It is expected that the more "open" personality, as delineated by the Paragraph Completion Test, will be more tolerant to the "newness" of marijuana, and will evidence a greater tendency toward experimentation with the drug than his "closed" counterpart. Low conceptual complexity scores will be expected to be indicative of more rigid life styles, and possession of simple black-white rules on the part of the subject. This, in turn, should result in fewer excursions into unknown areas, particularly in terms of drugs.

2. The hypothesis is tendered that marijuana users will be more heavily oriented toward necrophilic tendencies, as opposed to biophilic traits, as measured by the Life Orientation Test.

The rationale for this expectancy is mixed, and most tentative. On one hand, the risks involved in marijuana usage suggest overt necrophilic tendencies on the part of the user. On the other hand, expectancies of "mind expansion" contiguous to drug use might indicate nore biophilus tendencies. At this stage of knowledge as to overall drug effect, the dangers so outweigh the possible positive components that one would be hard put to ascribe anything but necrophilic tendencies on the part of users.

3. It is advanced that there will be no statistical evidence to suggest differences in intelligence, as measured by the Henmon-Nelson Test of Mental Ability, between selected groups of users and non-users of marijuana at the University of Alberta.

Halpern (Mayor's Committee, 1944) was unable to show any permanent change in intellectual function in subjects using marijuana, and it is expected that similar results will be obtained in this particular study.

4. It is advanced that social acquiescence scores, as measured by the Social Acquiescence Test, will be higher for users than for non-users at the university level. Bass (1958) regarded individuals scoring highly on the S-A scale as being "insensitive, non-intellectual ... unquestioning conformists to social demands". The current milieu, in terms of wide-spread marijuana usage among the "under-30" generation, has created a specialized form of social pressure. This pressure has taken the stance that the "old fools" (those of us over the chronologically-determined age of thirty) had "our thing" (liquor), and to be "in" one must swing with the "new" (marijuana). Peer-group-social-pressure-reactives would tend to follow the crowd, and it appears that the "crowd" is trying marijuana.

5. It is advanced that overall anxiety, as measured by the Cattell IPAT Anxiety Scale, will be more pronounced in users than in non-users. Cattell & Scheier (1965) determined that alcoholics scored highly on first order factor components identified as

"anxiety". It seems reasonable to expect similar anxiety patterns in marijuana users, if one leans toward an assumption, as do Straus & Bacon (1953), that marijuana has "taken the place of alcohol" among college students.

6. It is advanced that the Yeasayer-Naysayer Scale will indicate differences in test performance between users and non-users of marijuana. The expected direction will be that of a preponderance of non-users falling into the "naysayer" category. Couch & Kenison (1960) defined yeasayers as those having "relatively passive egos and are low in psychological inertia". Naysayers, on the contrary, "tend to reject impulses, whims, sudden moods, suggestions, provocation, coertion, excitement and novelty and have active controlling egos".

It is expected that individuals using marijuana, at the risk of incarceration and reputation, are more exemplified by the "yeasayer" personality.

7. It is hypothesized that authoritarian tendencies as measured by the California F Scale will tend to be more pronounced in adamant non-users of marijuana than in a population of users. The converse is also expected, in that subjects scoring low in authoritarianism are expected to be less concerned with traditional values, and would be more prone to venture into "forbidden areas" such as marijuana use.

Sociological Hypotheses

1. Sex: The hypothesis is that no differences exist.

2. Age: The hypothesis is that no differences exist.

3. Height and Weight: The hypothesis is that no differences exist.

4. Faculty: The hypothesis is advanced that incidence of marijuana usage will be greatest in the more "tender minded" areas of the humanities, such as Drama and Fine Arts, as opposed to faculties more intimately involved in "scientizing"; Mathematics, Physics, Computing Science, Chemistry, etc.

The rationale for this assumption lies in the impression that a "hang loose" ethic might more prevalent in the non-science faculties, and contribute toward a greater incidence of cannabis experimentation.

5. Year of Study: The hypothesis is that no differences exist.

6. Birth Order: The hypothesis is advanced that birth order is related to marijuana usage, with first born subjects being more prone to marijuana experimentation. It is well documented in the literature that firstborn children are more susceptible to social pressure and are more dependant than laterborns (Sears, 1950). It is expected that these behavior patterns will result in a greater tendency to yield to peer group pressures concerning drug use.

7. Drug Use: The hypothesis is advanced that use of marijuana will be related to use of the following drugs:

LSD
Heroin
Speed
Alcohol
Tobacco

8. Frequency of Use: The hypothesis is advanced that frequency of use of marijuana will occur "occasionally" (once a year, month) in the test population, as opposed to "only once" and "almost daily" response categories.

9. Last Use of Marijuana: The hypothesis is advanced that "last use" responses will indicate that the experimental population consists of infrequent users ("not used in over six months").

10. Style of Marijuana Use: The hypothesis is that a significantly large number of marijuana users do so "always in company".

11. Marital Status: No significant differences are expected.

12. Number of Dependants: No significant differences are expected.

13. Country of Birth: No significant differences are expected.

14. Citizenship: No significant differences are expected.

15. Province of Birth: No significant differences are expected.

16. Residence (away from or at home): The hypothesis is advanced that individuals living away from home will demonstrate a greater incidence of marijuana usage.

17. Age of Parents: No significant differences are expected.

18. Educational level of Parents: No significant differences are expected.

19. Income Level of Parents: The hypothesis is advanced that marijuana usage will be positively correlated with a high-income background (Whitehead, 1969).

20. Marital Status of Parents: The hypothesis is advanced that no significant differences will be observed between groups.

21. Amount of Pocket Money Available: The hypothesis is advanced that marijuana usage will be positively correlated with increased pocket money (Whitehead, 1969).

22. Male Hair Length: The hypothesis is advanced that marijuana usage will be positively correlated with increased hair length.

23. Male Facial Hirsutism: The hypothesis is advanced that marijuana usage will be positively correlated with the presence of beards and moustaches

24. Male, Female Style of Dress: The hypothesis is advanced that "hippy" style of dress, as opposed to "square" or "average", will be positively correlated with marijuana usage.

25. Male, Female Sheldonian: The possibility exists that Sheldonian somatotypes may be of some predictive interest. One possible hypothesis could be that heavy users would tend to be more "skeletal" in appearance, fitting in with some popular notions of what a "dope fiend" might appear to be.

POPULATION AND RESULTS

Samplings were taken from the student body at the University of Alberta and the Northern Alberta Institute of Technology by means of a questionnaire. From this information pool a random selection of users, potential users, and non-users of marijuana were contacted. Participation in further testing was requested. Participating students formed the experimental group. The following tables describe the total population and marijuana use, and subsequent psychological, sociological and descriptive analysis of the experimental group derived from the original population.

TABLE I

PERCENTAGE OF USERS, POTENTIAL USERS, AND NON-USERS FROM A POST-SECONDARY SCHOOL POPULATION

QUESTIONNAIRE RESPONSE

Aggregate Usable N = 1,211

Aggregate	Users	21%	N = 254
	Non-Users Positive	18%	N = 218
	Non-Users Negative	61%	N = 739

Breakdown by Faculty and Institution:

U of A - Education	N = 778
U of A - Fine Arts & Drama	N = 42
U of A - Arts & Science	N = 247
N.A.I.T. - Computer and Biological Sciences	N = 144
	N = 1211

Users:		%age of total Faculty Popul'n.
U of A - Education	N = 163	21%
U of A - Fine Arts & Drama	N = 36	87%
U of A - Arts & Science	N = 54	22%
N.A.I.T. - Aggregate	N = 27	19%
	N = 254	

*Non-Users Positive:		
U of A - Education	N = 156	20%
U of A - Fine Arts & Drama	N = 0	0%
U of A - Arts & Science	N = 57	23%
N.A.I.T. - Aggregate	N = 16	11%
	N = 218	

*Non-Users Negative:		
U of A - Education	N = 459	59%
U of A - Fine Arts & Drama	N = 6	13%
U of A - Arts & Science	N = 136	55%
N.A.I.T. - Aggregate	N = 101	70%
	N = 739	

*Non-User Positive: individuals which "might consider using marijuana under the right conditions"

*Non-User Negative: individuals which "would never consider using marijuana under any conditions"

TABLE II

BIFURCATED EXPERIMENTAL GROUP: USERS AND NON-USERS OF MARIJUANA. (N=160)

Psychological Test	Chi Square Probability
PCT (cognitive complexity)	N.S.
LOT (life orientation)	<.005 (.00010)
F (authoritarianism)	N.S.
AR (yeasayer-naysayer)	N.S.
SAT (social acquiescence)	<.005 (.0008)
HN IQ (verbal)	N.S.
HN IQ (quantitative)	N.S.
HN IQ (total)	N.S.
IPAT Anxiety (overt)	N.S.
IPAT Anxiety (covert)	N.S.
IPAT Anxiety (total)	N.S.

Two instruments produced indications of significant differences between users and non-users of marijuana. These tests are the LOT and the SAT. LOT results are reproduced in Table II A. The directionality obtained by LOT analysis indicated a preponderance of low LOT scores achieved by users of marijuana, as opposed to non-users. Low LOT scores are in the necrophile category. Chi Square significance with four degrees of freedom is 0.000108.

TABLE II A

LIFE ORIENTATION DISTRIBUTION - USERS NON-USERS OF MARIJUANA

Item No. 19 by Item No. 41

Necrophilus←→Biophilus

	1	2	3	4	5	Total
1 (users)	11	34	33	8	3	89
2 (non-users)	0	16	30	23	2	71
Total	11	50	63	31	5	160
Percentage by Rows						
1	12.4	38.2	37.1	9.0	3.4	55.6
2	0.0	22.5	42.3	32.4	2.8	44.4
Total	6.9	31.3	39.4	19.4	3.1	100.0
Percentage by Columns						
1	100.0	68.0	52.4	25.8	60.0	55.6
2	0.0	32.0	47.6	74.2	40.0	44.4
Total	6.9	31.3	39.4	19.4	3.1	100.0
Percentage by Total						
1	6 9	21.3	20.6	5.0	1.9	55.6
2	0.0	10.0	18.8	14.4	1.3	44.4
Total	6.9	31.3	39.4	19.4	3.1	100.0

Gamma = 0.520 Concordance = 3492. Discordance = 1103.
Z = 3.26 Tau-B (Kendall) = 0.317
Lambda = 0.0952 Lambda-B = 0.0103 Lambda-A = 0.2113
Tau(Goodman)=0.0802 Tau-B = 0.0341 Tau-A = 0.1459
Chi-Square = 23.351 with 4 degrees of freedom probability = 0.000108
Pearson-S Contingency Coefficient, C = 0.3569

The second instrument to produce significant differences between users and non-users was the SAT. SAT analysis indicated that a significant number of marijuana users scored lower in social acquiescence measures than non-users. Non-users trended toward higher social acquiescence scores. Chi square significance with two degrees of freedom is .000886.

SAT results are reproduced in Table II B.

TABLE II B

SOCIAL ACQUIESCENCE - USERS AND NON-USERS OF MARIJUANA

Item No. 19 by Item No. 47

		Social Acquiescence Low ←→ High			
		1	2	3	
User	1	33	37	19	89
Non-User	2	15	21	35	71
Total		48	58	54	160
Percentage by Rows					
	1	37.1	41.6	21.3	55.6
	2	21.1	29.6	49.3	44.4
Total		30.0	36.3	33.8	100.0
Percentage by Columns					
	1	68.8	63.8	35.2	55.6
	2	31.3	36.2	64.8	44.4
Total		30.0	36.3	33.8	100.0
Percentage by Total					
	1	20.6	23.1	11.9	55.6
	2	9.4	13.1	21.9	44.4
Total		30.0	36.3	33.8	100.0

Gamma = 0.435 Concordance = 3143. Discordance = 1239.

Z = 2.52 Tau-B (Kendall) = 0.260

Lambda = 0.1734 Lambda-B = 0.1373 Lambda-A = 0.2254

Tau(Goodman) = 0.0626 Tau-B = 0.0438 Tau-A = 0.0879

Chi-Square = 14.057 with 2 degrees of freedom probability = 0.000886

Pearson-S Contingency coefficient, C = 0.2842

TABLE III

BIFURCATED
SOCIOMETRIC AND DESCRIPTIVE VARIABLES

The following results were obtained from analysis of sociometric and descriptive variables and use and non-use of marijuana. Textual explanations follow.

Variable	Chi Square Probability
1. Age	N.S.
2. Sex	N.S.
3. Height	N.S.
4. Weight	N.S.
5. Faculty	N.S.
6. Year of Study	< .05 (.0560)
7. No. of older brothers	N.S.
8. No. of older sisters	N.S.
9. No. of younger brothers	N.S.
10. No. of younger sisters	N.S.
11. Use of Drugs	< .001 (.000)
12. Use of LSD	< .005 (.00002)
13. Use of Heroin	N.S.
14. Use of Speed	< .05 (.022)
15. Use of Alcohol	< .01 (.008)
16. Use of Tobacco	< .005 (.000001)
17. Use of Other	< .005 (.00001)
18. Frequency of Use	N.S.
19. Last Use	< .005 (.0000)
20. Style of Use	< .05 (.001)
21. Marital Status	N.S.
22. Number of Dependants	N.S.
23. Country of Birth	N.S.
24. Citizenship	N.S.
25. Province of Birth	N.S.
26. Residence	N.S.
27. Age of Mother	N.S.
28. Age of Father	N.S.
29. Educational level - Mother	N.S.
30. Educational level - Father	N.S.
31. Income level of parents	< .05 (.011)
32. Marital status of Parents	< .05 (.045)
33. Pocket money - High School	N.S.
34. Pocket money - University	N.S.
35. Male Hair length	< .005 (.0043)
36. Male Facial Hirsutism	N.S.
37. Male Style of Dress	< .05 (.036)
38. Male Somatotype	N.S.
39. Female Style of Dress	N.S.
40. Female Somatotype	N.S.

SIGNIFICANT DIFFERENCES BETWEEN GROUPS IN TABLE III:

Variables which demonstrated statistical significance were:

Year of Study:

Results indicated that a statistically significant number of respondees using marijuana were in first and second year of university, as opposed to third and fourth year students.

Drug Use:

A significantly larger group of admitted marijuana users admit to any drug use than do non-marijuana users.

L.S.D.:

A statistically significant number of admitted marijuana users have also admitted taking LSD, as opposed to non-marijuana users.

Speed (Amphetamine-like excitants):

Results indicate a higher percentage of admitted Speed use among admitted marijuana users than non-marijuana users.

Alcohol:

Results indicate a significantly higher incidence of admitted alcohol usage among admitted marijuana users than non-users.

Tobacco:

A significantly larger group of admitted marijuana users also admit use of tobacco, as opposed to non-marijuana users.

Other:

A greater incidence of other drug use is reported by admitted marijuana users than individuals claiming non-use of

marijuana. Only 5 non-marijuana users admitted to any drug use whatsoever, including prescription items and medicines. Since very few individuals in a university population have not taken drugs in their lifetime, including such items as cough syrup, aspirin, etc., it is an open question as to whether a negative response to the question of any drug use bears much if any validity other than as a measure of response set or insecurity.

Last Use:

Responses indicate that the trend of marijuana use was such that last exposure occurred within one week to six months. Only 8% of responders indicated that they had not had marijuana in over six months.

Style of Use:

The bulk of marijuana usage was described as occurring "in company" (69%), while "alone and in company" categories accounted for 29%. Solitary use was admitted by only 1% of the admitted user population.

Income Level of Parents:

Results indicated that a greater percentage of admitted users than non-users came from upper income bracket homes. 50% of the users came from homes where parental income exceeded $10,000. per annum, as opposed to only 29% of non-users, whose income bracket was similar.

Marital Status of Parents:

A significance level of .04 was obtained. However, two "zero" cells were obtained in "separated" and "divorced" categories among non-users. This may have had some serious effect on the statistics. As the data reads, the trend is for marijuana users

to come from homes where parents are living together.

Male Hair Length:

Results indicate that a significantly greater number of marijuana users have "average" hair length.

Male Style of Dress:

A statistically significant group of male marijuana users wear "average" clothes. No preponderance of "hippy" dress style is indicated.

A secondary analysis was performed. This consisted of trifurcating the test population into users, potential users (non-user positives), and non-users (non-user negatives).

Analysis of results of these separations follow in tables IV through VII.

TABLE IV

TRIFURCATED EXPERIMENTAL GROUP: USERS AND NON-USERS OF MARIJUANA. Non-User Positive X User

Psychological Test	Chi Square Probability
LOT	$<.01$ (.007)
PCT	N.S.
IPAT Covert	$<.05$ (.0509)
IPAT Overt	N.S.
IPAT Total	N.S.
Yeasayer-Naysayer	N.S.
SAT	$<.05$ (.0208)
H.N. - Quantitative	N.S.
H.N. - Verbal	N.S.
H.N. - Total	N.S.
F Scale	N.S.

Users of marijuana scored lower in Life Orientation than non-user positives. The observed directionality was for marijuana users to trend toward the necrophile category, as opposed to the biophilus. Potential users of marijuana trended toward higher LOT scores, or the biophilus range.

Covert anxiety was more manifest in potential users of marijuana than in users. Interestingly enough, overt anxiety, as measured by the IPAT, did not appear as a significant factor.

Social Acquiescence scores were significantly lower in users of marijuana than in potential users. The trend was for potential users to indicate higher social acquiescence concerns.

TABLE V

TRIFURCATED EXPERIMENTAL GROUP: USERS AND NON-USERS OF MARIJUANA. Non-User Positive X Non-User Negative

Psychological Test	Chi Square Probability
LOT	N.S.
PCT	N.S.
IPAT Covert	N.S. (.0551)
IPAT Overt	N.S.
IPAT Total	N.S.
Yeasayer-naysayer	N.S.
SAT	N.S.
H.N.-Quantitative	N.S.
H.N.-Verbal	N.S.
H.N.-Total	N.S.
F Scale	N.S.

Statistical differences were approached in covert anxiety. The trend was for greater covert anxiety manifestation in non-user negative groups, as opposed to lesser anxiety in potential users.

TABLE VI

TRIFURCATED SOCIOLOGICAL AND DESCRIPTIVE TESTS - Non-User Positive X User

1.	Age	N.S.
2.	Sex	N.S.
3.	Height	N.S.
4.	Weight	N.S.
5.	Faculty	N.S.
6.	Year of Study	N.S.
7.	No. of older brothers	N.S.
8.	No. of older sisters	N.S.
9.	No. of younger brothers	N.S.
10.	No. of younger sisters	N.S.
11.	Use of Drugs	N.S.
12.	Use of LSD	N.S.
13.	Use of Heroin	N.S.
14.	Use of Speed	N.S.
15.	Use of Alcohol	N.S.
16.	Use of Tobacco	<.05 (.01341)
17.	Use of Other	N.S.
18.	Frequency of Use	N.S.
19.	Last Use	N.S.
20.	Style of Use	N.S.
21.	Marital Status	N.S.
22.	Number of Dependants	N.S.
23.	Country of Birth	N.S.
24.	Citizenship	N.S.
25.	Province of Birth	N.S.
26.	Residence	N.S.
27.	Age of Mother	N.S.
28.	Age of Father	N.S.
29.	Educational level - Mother	N.S.
30.	Educational level - Father	N.S.
31.	Income level of parents	N.S.
32.	Marital status - parents	N.S.
33.	Pocket money- High School	<.05 (.0149)
34.	Pocket Money- University	N.S.
35.	Male Hair Length	N.S.
36.	Male Facial Hirsutism	N.S.
37.	Male Style of Dress	N.S.
38.	Male Somatotype	N.S.
39.	Female Style of Dress	N.S.
40.	Female Somatotype	N.S.

Tobacco use was significantly higher in users of marijuana than in potential users of the drug.

Increased levels of pocket money was reported by potential users of marijuana. This trend was opposed to that of marijuana users, who indicated a lesser tendency to have available pocket money in high school.

TABLE VII

TRIFURCATED SOCIOLOGICAL AND DESCRIPTIVE TESTS - NON-USER POSITIVE X NON-USER NEGATIVE

Variable	Chi Square Probability
1. Age	N.S.
2. Sex	N.S.
3. Height	N.S.
4. Weight	N.S.
5. Faculty	N.S.
6. Year of Study	N.S.
7. No. of older brothers	N.S.
8. No. of older sisters	N.S.
9. No. of younger brothers	N.S.
10. No. of younger sisters	N.S.
11. Use of Drugs	N.S.
12. Use of LSD	N.S.
13. Use of Heroin	N.S.
14. Use of Speed	N.S.
15. Use of Alcohol	N.S.
16. Use of Tobacco	< .05 (.0320)
17. Use of Other	N.S.
18. Frequency of Use	N.S.
19. Last Use	N.S.
20. Style of Use	N.S.
21. Marital Status	N.S.
22. Number of Dependants	N.S.
23. Country of Birth	N.S.
24. Citizenship	N.S.
25. Province of Birth	N.S.
26. Residence	N.S.
27. Age of Mother	N.S.
28. Age of Father	N.S.
29. Educational level - Mother	N.S.
30. Educational level - Father	N.S.
31. Income level of parents	N.S.
32. Marital Status of parents	N.S.
33. Pocket money - High School	N.S.
34. Pocket money - University	N.S.
35. Male hair length	N.S.
36. Male Facial Hirsutism	N.S.
37. Male Style of dress	N.S.
38. Male Somatotype	N.S.
39. Female style of dress	N.S.
40. Female Somatotype	N.S.

The only sociometric variable indicating differences between potential users of marijuana and adamant non-users is that of tobacco usage. Non-user positives reported greater incidence of tobacco exposure than non-user negatives.

CHAPTER IV

DISCUSSION

PSYCHOLOGICAL VARIABLES AND THE BIFURCATED TEST POPULATION: One hundred and sixty experimental subjects, divided into two categories, were tested. These categories were users and non-users of marijuana.

Analysis of results on psychological tests indicated that no significant differences between groups were obtained in either conceptual complexity, as measured by the PCT, Anxiety (covert, overt and total), as measured by Cattell's IPAT scale, Intelligence, as measured by the Henmon-Nelson (Quantitative, Verbal and Total), Authoritarianism, obtained through administration of the California F Test, and responses made to the Agreement Response Scale.

Significant differences did appear upon analysis of the Life Orientation Scale response. Users of marijuana significantly loaded on the Necrophilus end of the Necrophilus-Biophilus continuum. Interpretation of these data suggest a trend toward death orientation, as opposed to life orientation, in marijuana users. The converse, whereby non-users load more heavily on the Biophilus scale, suggests a greater preponderance of "life" orientation in non-users of marijuana, at least from this sample population.

The second psychological test to reveal statistically significant results between groups of users and non-users was the Social Acquiescence Test. Significant separations were

obtained, with non-users of marijuana scoring significantly higher in the upper ranges of "social acquiescence". Marijuana users, from this particular population, trended toward a diminished expression of social acquiescence concerns.

Psychological Variables and the Trifurcated Test population I: The same one hundred and sixty experimental subjects were divided into three categories, nomenclaturally designated as users, non-users positive, and non-users negative. Non-user positives were those individuals which indicated that they had as yet not used marijuana, but were open to the possibility of so doing "under the right circumstances". These particular individuals have been categorized as "potential" users of marijuana.

Non-user negatives were those individuals that indicated that they had never used marijuana, and would not so do under "and circumstances".

Analysis of results on psychological tests indicated that non-user positives and non-user negatives did not differ statistically on test performance on any of the following variables: Life Orientation, Perceptual Complexity, Anxiety, Agreement-Response, Social Acquiescence, Intelligence, or Authoritarianism. The impression given is that non-user positives and non-user negatives, as obtained from this population, are congruent in their psychological profiles, as measured by the aforementioned psychological instruments, and analysed by the particular statistical methods employed.

TRIFURCATED TEST POPULATION: Comparisons were made between users of marijuana and individuals in the non-user positive category. Analysis of the psychological test results indicated no statistical differences on any psychological variables other than Life Orientation and Covert Anxiety. Marijuana users scored significantly lower on the LOT scale than non-user negatives. LOT performance indicates that this particular test population behaves in such a way that the LOT discriminates between users and combined non-users positive and negative groups, as well as between users and non-user negatives.

The only statistically significant differentiation between anxiety and any of the three classifications appeared in this particular analysis. Significant differences in Covert Anxiety appeared, with marijuana users evidencing diminished indications of Covert Anxiety as compared to non-user positive individuals.

Sociological - Descriptive Variables and the Bifurcated Test Population: Users x Non-Users: Analysis of the data obtained with this population indicated that a number of variables were statistically significant. These were: year of study, drug use, last use, style of use, income level of parents, marital status of parents, male hair length and male style of dress. In the simple bifurcation of users and non-users, it appears that greater incidence of marijuana usage or experience is prevalent in first and second year students, as opposed to third and fourth year students.

Marijuana users admit to drug use, in a manner significantly different from that of non-users. The obtained trend is for non-marijuana users to deny *any drug* use whatsoever, including such things as cough syrup, penicillin, and any of the more common medications. It is as though a perceptual dichotomy exists in this respect, whereby a "drug" is very much separated from the concept, "medicine".

Other drug use, including LSD, Speed, Alcohol and Tobacco, occur in significantly greater frequency in marijuana users than in non-marijuana users.

Significance was obtained in terms of "last use" of marijuana with this population. The results indicate that exposure to marijuana was of a recent nature, with only 8% of the population admitting to not having marijuana in over twelve calendar months. Solitary use of marijuana appears to be a statistically infrequent mode of usage. The trend for this population is toward a gregarious form of marijuana exposure.

Parental income level variables in this population were such that significant numbers of marijuana users came from upper bracket income backgrounds. By the same token, significantly fewer marijuana users came from broken home backgrounds. One moot point might be an assumption to the effect that students who come from broken homes and who have "made it" as far as the post-secondary school level are of necessity rather careful and "square".

Male hair length and style of dress variables emerged as significant factors associated with use of marijuana products. Surprisingly enough, results obtained in this study indicate that the major trend in hair and sartorial style in users is toward an "average" appearance.

SOCIOLOGICAL AND DESCRIPTIVE VARIABLES AND THE TRIFURCATED TEST POPULATION: USERS x NON-USERS POSITIVE, AND NON-USERS POSITIVE x NON-USERS NEGATIVE:

Trifurcation analysis of the sociological and descriptive variables indicate a few statistically significant behavioral differentials. Tobacco usage appears to occur more frequently in marijuana users than in non-user positives, or potential users of marijuana. Secondly, available pocket money in high school emerged as a significant variable. Non-user positives trended toward increased pocket money, as opposed to users. This is a direct refutation of Whitehead's findings.

In the analysis of non-users positive vs. non-users negative, only one sociological-descriptive variable differential appeared with statistical significance; once again, tobacco. The results indicated that non-user negatives abstained from tobacco in greater degree than non-user positives.

CHAPTER V

SUMMARY OF RESULTS

In general, the findings of this empirical study support a conservative opinion of correlates of marijuana use and certain psychological variables. No evidence is obtained from this population to indicate significant relationships between use or non-use of marijuana and intelligence. Conceptual complexity does not seem to figure significantly in this analysis. Authoritarian variables suffer the same fate. The so-called Agreement-Response variable did not discriminate between users and non-users in this study. Overall anxiety does not seem to differ between these groups.

Significant differentials did appear in terms of "Life Orientation" and "social acquiescence". Trends obtained from this particular population of marijuana users were in the direction of low social acquiescence and "non-life", as opposed to high social acquiescence and "life" concerns. These particular results are in marked contrast to those obtained from non-marijuana devotées.

Sociometric and descriptive variable analysis indicate the following trends for these particular test populations: No differences in age, sex, height, weight, faculty, birth order, frequency of drug use, marital status, number of dependants, country of birth, citizenship, province of birth, residence, age of parents, educational level of parents, amount of pocket money available, presence of beards,

body build or female style of dress. It appears that no distinguishing differentials between users and non-users of marijuana in this population occur in terms of the aforementioned variables.

Sociometric analysis indicated that subjects in this particular population trended toward greater frequency of users of marijuana to be in first and second year academic levels, as opposed to third and fourth year. Marijuana users trend toward a greater frequency of drug and pharmacological compound usage admissions.

Marijuana users trend very decidedly toward greater incidence of tobacco and alcohol usage admission.

Style of use of marijuana was generally reported to be usually in company, with a use latency of one week to six months of having been tested. The users of marijuana trend to come from upper income brackets, parents intact, as opposed to broken homes.

Male length of hair and style of dress analysis indicated that male users of marijuana appear to fall into "normal" range in each classification.

"Normalcy" appears to be the category most applicable to marijuana users in this particular sociometric analysis.

APPENDIX

APPENDIX

A-1	Personal Data Sheet
A-2	L.O.T.
A-3	P.C.T.
A-4	Form AR
A-5	Famous Sayings
A-6	F Scale

PERSONAL DATA SHEET CONFIDENTIAL

1. Name______________________ I.D.#________
2. Age_______ Sex: M F (circle)
3. Height: Ft.____In.____ Weight:__________
4. Faculty or School:______ 5.Year of Study: 1 2 3 4 5 (circle)
6. Number of older brothers__________ sisters___________
7. Number of younger brothers__________ sisters___________
8. Have you ever used any drug whatsoever? yes no (circle)
9. Have you ever used:
   LSD yes__no__don't know__ Alcohol yes__no__don't know__
   Heroin yes__no__don't know__ Tobacco yes__no__don't know__
   Speed yes__no__don't know__ Other (specify)___________
10. Circle the item below which describes your use of marijuana (commonly known as "grass, pot, hash, etc.")
    A. never D. at least once a week
    B. once only E. almost daily
    C. occasionally (once a month, year)
11. Circle the item below which describes when you last used marijuana:
    A. I would never use it.
    B. I have not used it in over a year.
    C. I have not used it in over six months.
    D. I have not used it in over a month.
    E. I have used it within the last seven days.
    F. I have never used it, but would under the right conditions.
12. Style of Use. Circle the item below which describes use conditions.
    A. Always alone.
    B. always in company.
    C. sometimes alone and sometimes in company.
    D. never used under any conditions.
    E. have not yet found a suitable condition.
13. Marital Status: single__ married__ separated__ divorced__
14. Number of dependants:________
15. Country of Birth: Canada__ USA__ Other (specify)___________
16. Citizenship: Canada___ USA___ Other (specify)___________
17. Place of birth: (Province or State) ______________________
18. Residence: living at home___away from home___other_________
19. Age of parents: Mother____ Father ____
20. Educational level of parents: Mother______ Father_________
21. Income level of parents: below $3,000.____$3000-$6000_______
    $7000-$9000_____$10,000-$15,000______ above $15,000________
22. Marital status of parents: living together__separated__divorced__
23. Amount of pocket money available:
    High School: none__very little__barely adequate__adequate__ generous__
    University: none__very little__barely adequate__adequate__ generous__

FOR OFFICE USE ONLY. DO NOT WRITE BELOW THIS LINE.

24. MHL 1 2 3
    MFHS 1 2 3
    MSD 1 2 3
    MSHEL 1 2 3

25. FSD 1 2 3
    FSHEL 1 2 3

LOT

Form 40

Read each of the following statements and decide how much you agree or disagree. Show your choice on the separate answer sheet. Use the code below.

A: I agree
B; I agree a little
C: Undecided
D: I disagree a little
E: I disagree

NOTE:

There are no right or wrong answers.
There is no time limit.
Answer all items.
Mark only one choice for each item.

1. Most interesting, exciting pastimes involve much cost for the right kind of equipment.

2. Being part of a new struggling enterprise is more satisfying than working with a well-established organization.

3. There is more pleasure in being freed from tasks by machines than in operating them.

4. Untrimmed trees in the wild state never approach the beauty or symmetry of those properly cultivated.

5. The old values of thrift, order, sacrifice and being on time are still the way to success.

6. Postponement of marriage or the raising of children until one can enjoy material possessions such as cars or houses is desirable.

7. Being alone in a large, unfamiliar city causes one to feel small or insignificant.

8. Although modern art does not show things as they exist, it has a hidden, attractive quality.

9. One of the delights of life is the excitement gained from not knowing about tomorrow.

10. Persons careless in personal appearance should be required to model after those who dress with style and care.

11. A well-run organization usually is under the direction of a man who defines work-roles exactly.

12. The world problems of over-population, quarrels among countries and threats of war should make one hesitate to bring children into the world.

13. It is right to change laws when most people disregard them.

14. The care and concern of those professionals who help in time of bereavement or loss is praiseworthy.

15. Presenting a Shakespearian play with actors dressed as Eskimos instead of in regular costumes would be in poor taste.

16. Hiking or talking with friends are to be preferred to driving cars and being in competitive sports.

17. Persons who always want to change the rules, or add disruptive and different ideas to a meeting should be brought into line.

18. Newspaper and news reports of multiple-murders are useful, because people will then take precautions.

19. Being free to travel and see different things is more important than using one's money to buy houses, cars, land or furniture.

20. Fortunately, group pressures can be brought to bear on young people with extreme ideas.

21. Pleasant memories of past accomplishments are better than looking to the indefinite future.

22. Living in a comfortable manner must include some disorder, and some irregular arrangements.

23. The trend toward big-game "hunting" with cameras only may attract more people to safari expeditions.

24. Years of experience in dealing with life or work problems provide ready methods for handling most present problems.

25. Some guilt and self-disgust over past mistaken actions helps one deal with the present.

26. Being involved with the birth of new life, such as in a hospital nursery, must be an enjoyable experience.

27. Making an unfailing habit of keeping one's home and clothes in order is very desirable.

28. All too often parents don't know about or are unaware of their children's failures or shortcomings.

29. A manager must avoid any personal feelings or involvement in dealing with his workers.

30. Being always open to a change of plans or time schedules increases one's enjoyment of life.

31. Pictures of bleeding, dead or injured soldiers certainly make one fearful and wonderous about modern weapons.

32. Free interpretive dancing is generally more pleasing to watch than exact, traditional dance forms.

33. A successful person does not act without much concern and caution about what others will think.

34. The saying that, "There is nothing new under the sun." is mostly true, because little is really new.

35. There is a peace or inner serenity to be gained from attending the last rites of a departed one.

36. Self-discipline and refusal of immediate pleasures will result in gains, but hardly in a meaningful life.

37. A translation of a Shakespearian play into modern slang wording could prove interesting and give new understanding.

38. There is something overly immodest, almost indecent, about the bodily movements in modern dancing.

39. The uncertainty of the future gives one sound reason for some fear.

40. It is sad, but necessary, that children be taught to face the realities of death and the cruelties of life.

Name:______________________

PCT

Complete the following sentence stems. Use a brief paragraph or more to complete your thoughts.

1. Rules ...

2. When I am in doubt ...

3. Confusion ...

4. Parents ...

5. When I am criticized ...

6. When others criticize me it usually means ...

Name: ____________ FORM AR

Please record your choice for each item by making an "X" in the appropriate place.

	Strongly Disagree	Disagree	Slightly Disagree	No Answer	Slightly Agree	Agree	Strongly Agree
1. Let us eat, drink and be merry, for tomorrow we die							
2. I tend to make decisions on the spur of the moment.							
3. There are few things more satisfying than really to splurge on something - books, clothes, furniture, etc..							
4. Here today, gone tomorrow - that's my motto!							
5. Novelty has a great appeal to me.							
6. My feelings about others fluctuate a good deal.							
7. Conscience is another name for fear							
8. Movement, travel, change, excitement - that's the life for me.							
9. I'm apt to really blow up, but it doesn't last long							
10. It's great fun just to mess around.							
11. There's nothing so satisfying as really to tell someone off.							
12. I really enjoy plenty of excitement							
13. One should not give free reign to the passions, but rather control and weigh them before expressing them							
14. I seldom, if ever, lose my temper							
15. Uncontrolled impulsiveness is not part of my makeup							
16. It's hard to get me upset							
17. My speech is quite slow and deliberate.							
18. I feel uncomfortable when people get too emotional							
19. I almost never respond impulsively to people or events.							

Name____________________________

FAMOUS SAYINGS

This is a test of your attitudes toward various famous sayings. Read each one carefully to find out its true meaning for you. If you agree more than you disagree with the saying, "X" the proper space below "Yes". If you disagree more than you agree with the saying, "X" the proper space below "No". If you are uncertain or not sure whether you agree or disagree, "X" the space below the "?". Make one mark for every saying.

EXAMPLE:

If you agree with the first saying, your answer should be marked this way:

Yes ? No
X ___ ___

If you disagree with the first saying, your answer should be marked this way:

Yes ? No
___ ___ X

If you cannot make up your mind whether you agree or disagree with a statement, it will help if you ask yourself if you believe this statement is usually true or usually false. If it is usually true, mark "Yes". If it is usually false, mark "No".

___ ___ ___

Yes ? No
___ ___ ___ Success against odds is the greatest of American ideals
___ ___ ___ Love is the greatest of Arts
___ ___ ___ Love of the opposite sex makes the world go round
___ ___ ___ They never fail who die in a great cause
___ ___ ___ Destroyers of tyranny have contributed the most to mankind
___ ___ ___ You only injure yourself when you take notice of despised critics
___ ___ ___ The only known cure for fear is faith
___ ___ ___ Never trust a flatterer
___ ___ ___ He who laughs last laughs longest
___ ___ ___ No principle is more noble or holy than that of true obedience
___ ___ ___ There is nothing which the body suffers which the soul may not profit by
___ ___ ___ One false friend can do more harm than one hundred enemies
___ ___ ___ No gift is more precious than good advice
___ ___ ___ Obedience is the mother of success
___ ___ ___ The victory always remains with those who admire rather than with those who criticize

F

____
Name

-3 = Strongly Disagree
-2 = Disagree
-1 = Slightly Disagree
+1 = Slightly Agree
+2 = Agree
+3 = Strongly Agree

-3-2-1+1+2+3 1. Obedience and respect for authority are the most important virtues children should learn.
-3-2-1+1+2+3 2. A person who has bad manners, habits, and breeding can hardly expect to get along with decent people.
-3-2-1+1+2+3 3. If people would talk less and work more, everybody would be better off.
-3-2-1+1+2+3 4. The businessman and the manufacturer are much more important to society than the artist and the professor.
-3-2-1+1+2+3 5. Science has its place, but there are many important things that can never be understood by the human mind.
-3-2-1+1+2+3 6. Young people sometimes get rebellious ideas, but as they grow up they ought to get over them and settle down.
-3-2-1+1+2+3 7. What this country needs most, more than laws and political programs, is a few courageous, tireless, devoted leaders in whom the people can put their faith.
-3-2-1+1+2+3 8. No sane, normal, decent person could ever think of hurting a close friend or relative.
-3-2-1+1+2+3 9. Nobody ever learned anything really important except through suffering.
-3-2-1+1+2+3 10. What the youth needs is strict discipline, rugged determination, and the will to work and fight for family and country.
-3-2-1+1+2+3 11. An insult to our honor should always be punished.
-3-2-1+1+2+3 12. Sex crimes, such as rape and attacks on children, deserve more than mere imprisonment; such criminals ought to be publicly whipped, or worse.
-3-2-1+1+2+3 13. There is hardly anything lower than a person who does not feel a great love, gratitude, and respect for his parents.
-3-2-1+1+2+3 14. Most of our social problems would be solved if we could somehow get rid of the immoral, crooked, and feeble-minded people.
-3-2-1+1+2+3 15. Homosexuals are hardly better than criminals and ought to be severely punished.
-3-2-1+1+2+3 16. When a person has a problem or worry, it is best for him not to think about it, but to keep busy with more cheerful things.

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